

**TEXAS ARMY NATIONAL GUARD
CALIFORNIA CROSSING SITE**
1755 California Crossing Road,
Dallas, Texas 75220

**AIR EMISSIONS INVENTORY ANALYSIS
UNDER THE CLEAN AIR ACT AMENDMENTS**

Submitted to:

**ADJUTANT GENERAL'S DEPARTMENT
TEXAS ARMY NATIONAL GUARD
STATE OF TEXAS**

Submitted by:

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ACRONYMS

CO	Carbon Monoxide
ft ³	Cubic Feet
ft ³ yr	Cubic Feet per Year
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
hr/yr	Hours per Year
IC	Internal Combustion
lb	Pound
MMBtu	Million British thermal unit
MMBtu/hr	Million British thermal unit per hour
MSDS	Material Safety Data Sheet
NG	Natural Gas
NO _x	Nitrogen Oxides
PBR	Permit by Rule
PM	Particulate Matter
PM ₁₀	Particulate Matter less than or equal to 10 microns in diameter
ppmv	Parts per million by volume
SO ₂	Sulfur Dioxide
TAC	Texas Administrative Code
tpy	Tons per Year
TSP	Total Suspended Particulates
TXAG	Texas Adjutant General
VOC	Volatile Organic Compound
yr	Year

EXECUTIVE SUMMARY

An air emissions inventory was conducted at the California Crossing site to quantify the actual and potential emissions of criteria and hazardous air pollutants emitted at the site during a 12-month period between 2001 and 2002. The purpose of this report is to determine overall compliance with the Clean Air Act. As part of that determination, Title V applicability was examined.

The California Crossing Site consists of an Armory and an Organization Maintenance Shop (OMS). The site located at 1755 California Crossing Road, Dallas, Texas 75220 is not a major source of any criteria pollutant, volatile organic compound (VOC) or hazardous air pollutant (HAP). Total potential and actual emissions for all pollutants are well below two tons per year. In addition, none of the emissions sources are out of compliance with applicable regulations.

The site is located in a serious non-attainment area, but because of its size (very low potential emissions) it is very unlikely to become a major source in the foreseeable future, even with moderate growth. Periodically the air compliance personnel are advised to check the site for equipment/operation changes that could result in permitting or other compliance requirements.

SECTION 1.0 OVERVIEW OF TXARNG ARMORY AND OMS AT CALIFORNIA CROSSING

An air emissions inventory was conducted at the California Crossing site to quantify the actual and potential emissions of criteria and hazardous air pollutants emitted at the site during a 12-month period between 2001 and 2002. The purpose of this report is to determine overall compliance with the Clean Air Act. As part of that determination, Title V applicability was examined.

1.1 INTRODUCTION

The California Crossing Site consists of an Armory and an Organization Maintenance Shop (OMS). The site is located at 1755 California Crossing Road, Dallas, Texas 75220. The POC for the Armory site is Sgt. Ripley, phone (972) 556-1513 and for the POC for the OMS site is SFC Jimmy Terry, phone (972) 556-1002 ext.1344. The OMS is co-located with the Armory.

A representative of GEOMET Technologies LLC, Ms. Radhika Narayanan, made a visit to this site on November 6, 2002. Information regarding equipment and activities was obtained by interview of personnel and inspection of the equipment.

1.2 AIR EMISSION SOURCES

Table 1-1 lists the equipment and activities that generate air pollutant emissions at the California Crossing Site. As shown in the table the air emission sources at the Armory consist of heaters used for hot water or space heating and several pieces of equipment stored in the motor pool that are either not used or are only used offsite during annual training. The Armory also has a firing range that has never been used and has been condemned (not shown in table below).

The OMS air emission sources consist of space heaters, aerosol spray can operations and welding. The facility does not currently have any can puncturing operations. The spent aerosol cans are collected and sent to another TXANG facility for processing and disposal.

The portable engines located at the Motor Pool are not used on-site. They are considered non-road engines and thus they are not treated as stationary sources. Accordingly, emissions from these engines do not contribute to site's permit status under Title V. As a result, their emissions have not been estimated in this report. Nevertheless, the engines/generators have been listed here in order to have a complete inventory.

**TABLE 1-1.
CALIFORNIA CROSSING SITE AIR EMISSION SOURCES**

Location	Source Type	Heat Input ¹ (MMBtu/hr) or Capacity	Fuel or Solvent/Material Type	Manufacturer or Model	2002 operating Schedule or Fuel/Material Use (ft ³ /yr) ²
ARMORY					
Men's Room	Water Heater	0.075	NG	Bradford White	16,932
Kitchen	Water Heater	0.075	NG	State Courier 510	16,932
Men's Room	Space Heater	0.050	NG	Reznor US-50F	11,273
Supply Rooms	10 Space Heaters	0.125	NG	Reznor US-125F	281,831

Location	Source Type	Heat Input ¹ (MMBtu/hr) or Capacity	Fuel or Solvent/Material Type	Manufacturer or Model	2002 operating Schedule or Fuel/Material Use (ft ³ /yr) ²
Downstairs Utility Room	3 Space Heaters	0.150	NG	Rheem Criterion II	101,459
Upstairs Utility Room	3 Space Heaters	0.100	NG	Rheem Criterion II	67,639
Upstairs Utility Closet	2 Space Heaters	0.100	NG	Rheem Criterion II	45,093
Downstairs Utility Closet	2 Space Heaters	0.150	NG	Rheem Criterion II	67,639
Upstairs Classroom (Utility Closet)	2 Space Heaters	0.100	NG	Rheem	45,093
Upstairs Classroom	2 Space Heaters	0.100	NG	Rheem	45,093
Drill Hall	4 Space Heaters	0.175	NG	Reznor US-175F	157,825
Kitchen Closet	Space Heater	0.180	NG	Borg Warner	40,584
Kitchen	2 Dishwashers	0.021	NG	Hobart Vulcan	9,520
Motor Pool	3 Portable Heaters	0.250	Diesel	VBM Corp.250 A	Not used
	Generator	3 kW	Diesel	Tobyhanna MEP 701A	Used in field
	28 Generators	5 kW	Diesel	Libby MEP 002 A	Used in field
	17 Generator	10 kW	Diesel	Libby MEP 003 A	Used in field
	Generator	10 kW	Gasoline	Hercules MEP-018A 4 A084-3	Not used
	Generator	10 kW	Gasoline	Jeta Power MEP-018 A 4A084-3	Not used
	4 Compressors	1.5 kW	Gasoline	Chrysler Outboard Mfg.	Not used
	8 Fuel Pods	600 gallon	Diesel	Beta Systems	Mostly used in field
	4 Fuel Pods	600 gallon	N/A	CEL-NIL-T-40136	Stored empty onsite
OMS					
Service Bay	4 Space Heaters	0.100	NG	Janitrol 68-100-A	To be replaced soon
	Surface Coating	16 oz. can 16 oz. can	Black Tan Brake Cleaner	Krylon Krylon ZEP	50 cans 50 cans 15 gal.
	Welding	E 7018	-	-	Negligible use

¹: Heat Input is given is for each individual unit

²: The natural gas usage for the facility as a whole was available, however it was not available for individual heating units. To obtain individual heating unit natural gas consumption, the overall usage was proportioned based on the individual unit capacities.

Notes and Assumptions:

- 1) The capacities for some of the central heat space heaters at the Armory were estimated based on the size of the coil or condenser. The plates for some of the heaters were not identifiable.
- 2) At the OMS, all existing space heaters were to be replaced by new space heaters on November 12, 2002. No information on the new space heaters was available at this time.
- 3) An old parts washer at the OMS was replaced by a steam degreaser that uses steam, water, and detergents. Since this is not an air emission source, it has been excluded from table of sources.

1.3 TITLE V APPLICABILITY

The California Crossing site is located in Dallas County. The attainment status for the criteria pollutants in this region and the pollutant thresholds that determine major source status are indicated in Table 1-2 below.

**TABLE 1-2.
ATTAINMENT STATUS AND MAJOR SOURCE THRESHOLD IN DALLAS
COUNTY**

POLLUTANT	ATTAINMENT STATUS	MAJOR SOURCE THRESHOLD
OZONE	Nonattainment (serious)	50 tpy (VOC and/or NOx emissions)
CO	Attainment	100 tpy
SO ₂	Attainment	100 tpy
NO _x	Attainment	100 tpy
PM10	Attainment	100 tpy
Lead	Attainment	100 tpy

For hazardous air pollutants (HAPs), a facility is a major source if it has the potential to emit more than 10 tons per year of a single HAP or 25 tons per year of two or more HAPs.

The major source thresholds listed above indicate the quantity of potential emissions that would classify a facility as a major source if the potential emissions exceed that level. Major sources require a Title V Permit. None of the potential emissions of any pollutant from the Armory or the OMS exceeds the thresholds listed above. Section 2.0 provides a summary of actual and potential emissions from the California Crossing site.

SECTION 2.0 SUMMARY OF AIR EMISSIONS

Tables 2-1 and 2-2 present the estimated annual actual and potential VOC, TSP and criteria pollutant emissions from the Armory and OMS at the California Crossing site. The estimated actual and potential hazardous air pollutant emissions from the site are presented in Table 2-3. As shown in the tables all total emissions (actual and potential) are well below 1 ton per year for all regulated pollutants, except for nitrogen oxides (NO_x), whose total potential emissions are approximately 1.5 tons per year. Table 2-3 shows the total HAP emissions from both the Armory and OMS. About 90% of the actual HAP emissions are contributed by the OMS sources whereas about 40% of the potential HAP emissions are from the OMS sources.

**TABLE 2-1.
ESTIMATED ACTUAL CRITERIA POLLUTANT EMISSIONS**

Location & Type of Source*	Heat Input (MMBtu/hr) or Capacity	No. of Units	2002 Fuel Use (ft³) or Material Use	Estimated CY2002 Emissions (tons)						
				TSP	PM ₁₀	SO ₂	CO	VOC	NO _x	Lead
ARMORY										
Men's Room	0.075	1	16,932	6.4E-05	6.4E-05	5.1E-06	3.4E-04	4.7E-05	8.0E-04	4.2E-09
Kitchen	0.075	1	16,932	6.4E-05	6.4E-05	5.1E-06	3.4E-04	4.7E-05	8.0E-04	4.2E-09
Men's Room	0.050	1	11,273	4.3E-05	4.3E-05	3.4E-06	2.3E-04	3.1E-05	5.3E-04	2.8E-09
Supply Rooms	0.125	10	281,831	1.1E-03	1.1E-03	8.5E-05	5.6E-03	7.8E-04	1.3E-02	7.0E-08
Downstairs Utility Room	0.150	3	101,459	3.9E-04	3.9E-04	3.0E-05	2.0E-03	2.8E-04	4.8E-03	2.5E-08
Upstairs Utility Room	0.100	3	67,639	2.6E-04	2.6E-04	2.0E-05	1.4E-03	1.9E-04	3.2E-03	1.7E-08
Upstairs Utility Closet	0.100	2	45,093	1.7E-04	1.7E-04	1.4E-05	9.0E-04	1.2E-04	2.1E-03	1.1E-08
Downstairs Utility Closet	0.150	2	67,639	2.6E-04	2.6E-04	2.0E-05	1.4E-03	1.9E-04	3.2E-03	1.7E-08
Upstairs Classroom (Utility Closet)	0.100	2	45,093	1.7E-04	1.7E-04	1.4E-05	9.0E-04	1.2E-04	2.1E-03	1.1E-08
Upstairs Classroom	0.100	2	45,093	1.7E-04	1.7E-04	1.4E-05	9.0E-04	1.2E-04	2.1E-03	1.1E-08
Drill Hall	0.175	4	157,825	6.0E-04	6.0E-04	4.7E-05	3.2E-03	4.3E-04	7.4E-03	3.9E-08
Kitchen Closet	0.180	1	40,584	1.5E-04	1.5E-04	1.2E-05	8.1E-04	1.1E-04	1.9E-03	1.0E-08
Kitchen	0.021	2	9,520	3.6E-05	3.6E-05	2.9E-06	1.9E-04	2.6E-05	4.5E-04	2.4E-09
ARMORY TOTAL EMISSIONS				3.4E-03	3.4E-03	2.7E-04	1.8E-02	2.5E-03	4.3E-02	2.3E-07
OMS										
Service Bay - Heaters	0.100	4	90,186	3.4E-04	3.4E-04	2.7E-05	1.8E-03	2.5E-04	4.2E-03	2.3E-08
Service Bay – Surface Coating			26.72 gal.	7.9E-02	-	-	-	2.3E-02	-	-
OMS TOTAL EMISSIONS				8.0E-02	3.4E-04	2.7E-05	1.8E-03	2.3E-02	4.2E-03	2.3E-08
TOTAL EMISSIONS FOR SITE			997,100	8.3E-02	3.7E-03	3.0E-04	2.0E-02	2.6E-02	4.7E-02	2.5E-07

*: Unless otherwise noted, source type is space heater, hot water heater, furnace and other external combustion sources.

TABLE 2-2.
ESTIMATED POTENTIAL CRITERIA POLLUTANT EMISSIONS

Location & Type of Source*	Heat Input (MMBtu/hr) or Capacity	No. of Units	Potential Fuel Use (ft ³)	Maximum Uncontrolled Potential to Emit (tons)						
				TSP	PM ₁₀	SO ₂	CO	VOC	NO _x	Lead
ARMORY										
Men's Room	0.075	1	644,976	2.5E-03	2.5E-03	1.9E-04	1.3E-02	1.8E-03	3.0E-02	1.6E-07
Kitchen	0.075	1	644,976	2.5E-03	2.5E-03	1.9E-04	1.3E-02	1.8E-03	3.0E-02	1.6E-07
Men's Room	0.050	1	429,412	1.6E-03	1.6E-03	1.3E-04	8.6E-03	1.2E-03	2.0E-02	1.1E-07
Supply Rooms	0.125	10	10,735,294	4.1E-02	4.1E-02	3.2E-03	2.1E-01	3.0E-02	5.0E-01	2.7E-06
Downstairs Utility Room	0.150	3	3,864,706	1.5E-02	1.5E-02	1.2E-03	7.7E-02	1.1E-02	1.8E-01	9.7E-07
Upstairs Utility Room	0.100	3	2,576,471	9.8E-03	9.8E-03	7.7E-04	5.2E-02	7.1E-03	1.2E-01	6.4E-07
Upstairs Utility Closet	0.100	2	1,717,647	6.5E-03	6.5E-03	5.2E-04	3.4E-02	4.7E-03	8.1E-02	4.3E-07
Downstairs Utility Closet	0.150	2	2,576,471	9.8E-03	9.8E-03	7.7E-04	5.2E-02	7.1E-03	1.2E-01	6.4E-07
Upstairs Classroom (Utility Closet)	0.100	2	1,717,647	6.5E-03	6.5E-03	5.2E-04	3.4E-02	4.7E-03	8.1E-02	4.3E-07
Upstairs Classroom	0.100	2	1,717,647	6.5E-03	6.5E-03	5.2E-04	3.4E-02	4.7E-03	8.1E-02	4.3E-07
Drill Hall	0.175	4	6,011,765	2.3E-02	2.3E-02	1.8E-03	1.2E-01	1.7E-02	2.8E-01	1.5E-06
Kitchen Closet	0.180	1	1,545,882	5.9E-03	5.9E-03	4.6E-04	3.1E-02	4.3E-03	7.3E-02	3.9E-07
Kitchen	0.021	2	362,612	1.4E-03	1.4E-03	1.1E-04	7.3E-03	1.0E-03	1.7E-02	9.1E-08
TOTAL ARMORY EMISSIONS				1.3E-01	1.3E-01	1.0E-02	6.9E-01	9.5E-02	1.6E+00	8.6E-06
OMS										
Service Bay - Heaters	0.100	4	3,435,294	1.3E-02	1.3E-02	1.0E-03	6.9E-02	9.4E-03	1.6E-01	8.6E-07
Service Bay – Surface Coating			112.5 gal.	3.3E-01	-	-	-	9.7E-02	-	-
TOTAL OMS EMISSIONS				3.5E-01	1.3E-02	1.0E-03	6.9E-02	1.1E-01	1.6E-01	8.6E-07
TOTAL EMISSIONS FOR SITE			-	4.8E-01	1.4E-01	1.1E-02	7.6E-01	2.0E-01	1.8E+00	9.5E-06

*: Unless otherwise noted, source type is space heater, hot water heater, furnace and other external combustion sources.

TABLE 2-3.
TOTAL ESTIMATED ACTUAL AND POTENTIAL HAP EMISSIONS

Pollutant	HAP Emissions (ton/yr)	
	Actuals	Potentials
Arsenic Compounds	9.1E-08	3.5E-06
Beryllium Compounds	5.4E-09	2.1E-07
Cadmium Compounds	5.0E-07	1.9E-05
Chromium Compounds	6.3E-07	2.4E-05
Cobalt Compounds	3.8E-08	1.5E-06
Lead Compounds	2.3E-07	8.6E-06
Manganese Compounds	1.7E-07	6.6E-06
Mercury Compounds	1.2E-08	4.5E-07
Nickel Compounds	9.5E-07	3.6E-05
Selenium Compounds	1.1E-08	4.1E-07
Benzene	9.5E-07	3.6E-05
Dichlorobenzene	5.4E-07	2.1E-05
Formaldehyde	3.4E-05	1.3E-03
Hexane	8.2E-04	3.1E-02
Naphthalene	2.8E-07	1.1E-05
Polycyclic Organic Matter (POM)	4.0E-08	1.5E-06
Toluene	5.8E-04	2.5E-03
Ethylbenzene	1.3E-03	3.8E-02
Xylene	7.4E-03	3.1E-02
Glycol Ethers	9.1E-04	3.8E-03
TOTAL	1.1E-02	1.1E-01

Notes and Assumptions:

- 1) Potential emissions from the space and water heaters were calculated by assuming that each of these sources has the potential to operate on a continuous basis throughout the entire year (i.e., 24 hr/day, 7 day/week, and 365 day/yr for a total of 8,760 hr/yr).
- 2) When estimating actual emissions from surface coating and miscellaneous chemical/solvent use, and fueling operations, it is assumed that they occur during a normal year-round, single shift schedule of 8 hr/day, 5 day/week for a total of 2080 hr/yr. When estimating potential emissions from these sources, we assume a year-round, three shift schedule of 8 hr/day, 7 day/wk for a total of 8760 hr/yr. Therefore, potential emissions from these sources are calculated by multiplying the actual emissions by a factor of 4.21 (8760/2080). For example, if 30 gallons of paint are used per year, then potential paint use is (8760/2080)*30 gal/yr.
- 3) Equipment that is never used will not contribute to the estimate of actual emissions; however, for Title V permitting purposes the potential to emit from such equipment must be included. If the equipment is capable of operation the potential emissions will be calculated whenever possible. Equipment that does not work has not been treated as a source, and has been excluded from the emissions inventory.
- 4) Emissions for equipment classified, as non-road engines are not included in the summary

tables above. Generators used exclusively for annual training offsite have been treated as non-road engines.

- 5) Emissions from welding were considered negligible <0.1 lb/yr due to the very small quantity of welding rod used.
- 6) Emissions from the tactical haulers and fuel pods used in the field were not calculated due to the lack of accurate fuel data. However, emissions for annual training that occurs a limited number of times per year will be insignificant.

SECTION 3.0 COMPLIANCE STATUS AND STRATEGY

A review of air quality rules as they pertain to the California Crossing Armory and OMS is summarized in this section along with strategies to maintain or achieve future compliance.

3.1 FACILITY WIDE REQUIREMENTS

The various standards applicable to the entire facility and cited by the rule number are given below. In addition, the relevance of the rules to the California Crossing Armory and OMS are discussed.

Section 101.10: In ozone non-attainment areas emission inventory rules apply to all major sources and to sources whose actual emissions are equal or more than 10 tpy of VOC, 25 tpy of NO_x or 100 tpy of CO. The rule also applies to any source in an attainment area that emits 100 tpy or more of any criteria pollutant or VOC, and to any major source of hazardous air pollutants (HAPs). The rules require the submission of an initial emissions inventory and annual updates.

Emissions at the Armory and OMS are below those quoted in the above standard. Thus, Section 101.10 is not applicable.

Section 112.3: Net ground level concentrations of SO₂ are not to exceed 0.4 parts per million by volume (ppmv), averaged over a 30-minute period. In Galveston or Harris counties the limit is 0.28 ppmv, and in Jefferson or Orange Counties the limit is 0.32 ppmv.

GEOMET is unable to determine if the California Crossing Armory and OMS complies with the relevant standard unless ambient monitoring or detailed dispersion modeling are carried out. These tasks are beyond the scope of work under the current contract. However, because of the small quantities of SO₂ emitted from the site, it is likely that the standard is not being exceeded.

Section 111.111: No person may cause, suffer, allow, or permit visible emissions from any source, except as follows. For stationary vents visible emissions should not exceed 30% opacity shall not exceed 30% averaged over a six-minute period. If the source was constructed after January 31, 1972 opacity shall not exceed 20% averaged over a six-minute period.

GEOMET is unable to determine if the California Crossing site complies with relevant standard unless visual opacity tests (Test Method 9 40 CFR 60, Appendix A) are performed. Typically if fuel -burning equipment similar to what is found at the Armory is well maintained and operated properly opacity standards such as those above should be met.

3.2 SOURCE CATEGORY - SPECIFIC REQUIREMENTS

The specific standards that apply to space heaters at California Crossing (cited by rule number) and their relevance are discussed below.

Section 116.110 states that "Before any actual work is begun on the facility, any person who plans to construct any new facility or to engage in the modification of any existing facility which may emit air contaminants into the air of this state shall either:

- ☐ obtain a permit under §116.111 of this title (relating to General Application);
- ☐ satisfy the conditions for a standard permit;

- ❑ satisfy the conditions for a flexible permit;
- ❑ satisfy the conditions for facilities permitted by rule under Chapter 106; or
- ❑ satisfy the criteria for a *de minimis* facility or source under §116.119”

The California Crossing site does not qualify for *de minimis* exemption from New Source Review permit requirements under TAC 30 §116.119. This is because the facility has sources, such as combustion units, that are not automatically exempted as *de minimis* sources. TCEQ’s *de minimis* facilities list includes domestic heating equipment and water heaters. The heating equipment at the California Crossing site does not meet the definition of ‘domestic’ equipment, and hence does not qualify as *de minimis*.

The *de minimis* rule is based upon **contaminant specific** site-wide uncontrolled emissions. In general, if a facility does not qualify for *de minimis* status, none of the air emission sources at that facility can qualify as *de minimis*. However, VOC components from aerosol coating operations are different from VOC components emitted from combustion sources. As a result, a facility can use a combination of the one line PBR (i.e. for space heaters) and use *de minimis* as per 30 TAC §116.119 for other sources such as aerosol spray painting.

Source category-specific permits by rule are described in Chapter 106. When the sources meet the conditions of a given permit by rule, the source is not required to have a construction permit. Permits by rule and other regulatory requirements that apply to all sources at the California Crossing site are discussed below.

Surface Coating – Aerosol Spray Can Use

TAC 30 §116.119(a)(2)(B): Coating operations (excluding plating materials) that do not use quantities that exceed 100 gallons per year are exempt as *de minimis* sources. The annual use of aerosol coatings at the California Crossing site is well below this limit, and the operations can therefore be classified as *de minimis*.

Space Heaters

TAC 30 §106.102 (PBR 106.102): Combustion units designed and used exclusively for comfort heating purposes employing liquid petroleum gas, natural gas, or solid wood as fuel. Combustion of bark chips, sawdust, wood chips, treated wood, or wood contaminated with chemicals is not included.

The space heaters at the California Crossing site meet the permit by rule conditions.

Internal Combustion Engines

TAC 30 §106.511 (PBR 106.511): Internal combustion (IC) engine and gas turbine driven compressors, electric generator sets, and water pumps, used only for portable, emergency, and/or standby services, provided that the maximum annual operating hours shall not exceed 10% of the normal annual operating schedule of the primary equipment; and all electric motors. (For purposes of this exemption “standby” means to be used as a “substitute for,” and not “in addition to” other equipment.)

The generators at the California Crossing site are portable, and therefore meet these conditions.

Welding

TAC 30 §106.227: Brazing, soldering, or welding equipment, except those which emit 0.6 ton per year or more of lead, are permitted by rule. The welding activities at the California Crossing site qualify for this exemption.

Storage Tanks

TAC 30 §115.112 to §115.169: These rules apply to VOC sources such as storage of volatile organic compounds, vent gas control, and municipal solid waste landfills. Of these, only the storage of VOC is relevant to the California Crossing Armory and OMS.

Section 115.112: These rules apply to the control of VOCs from the storage of volatile organic compounds. However, sources meeting specific conditions (as per rule 115.117) are exempt from such requirements.

Section 115.117: Various exemptions are listed. However, the exemption that applies at the California Crossing site is as follows: storage containers with a capacity of less than 25,000 gal. are exempt.

3.3 COMPLIANCE STRATEGY

The California Crossing Armory and OMS is not a major source of any criteria pollutant or VOC. It is not a major source of any hazardous air pollutant either. No emissions source is out of compliance with applicable regulations. Even though the site is located in a serious non-attainment area, because of its size (very low potential emissions) it is not likely to become a major source in the foreseeable future, even with moderate growth. However, periodically the air compliance personnel are advised to check the site for equipment/operation changes that could result in permitting requirements or changes.

SECTION 4.0 SAMPLE CALCULATIONS

External Combustion (Natural Gas) Example Calculation

Note: This example calculation is applicable to all external combustion sources (space/hot water heaters) found at the California Crossing Armory.

Data: Natural gas fired space heater, located in the Kitchen Closet
Rated capacity: 0.180 MMBtu/hr, Annual fuel usage: 40,584 ft³/yr

Emission Factors:

The following reference was used to obtain emission factors for the heaters:

U.S. Environmental Protection Agency. Office of Air Quality Planning and Standards. *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and the Area Sources*. (AP-42). Fifth Edition. Research Triangle Park, NC, 1985-2000.

For the purpose of selecting appropriate emission factors, external combustion sources (i.e., heaters, furnaces, boilers) are categorized by the heat input capacity of the unit with the following categories:

<u>Combustor Type</u>	<u>Heat Input Capacity (MMBtu/hr)</u>
Large Boiler	> 100
Small Boiler	0.3 - 100
Residential Furnace	< 0.3

The rated capacity of 180,000 Btu/hr places this boiler in the residential furnace category. The appropriate VOC and criteria pollutant emission factors for this fuel type and furnace size were taken from Tables 1.4-1 and 1.4-2 of AP-42.

Total Particulate	7.6 lb/10 ⁶ cubic feet
Particulate <10 microns	7.6 lb/10 ⁶ cubic feet
Sulfur Dioxide	0.6 lb/10 ⁶ cubic feet
Carbon Monoxide	40 lb/10 ⁶ cubic feet
Nitrogen Oxides	94 lb/10 ⁶ cubic feet
VOCs (non-methane)	5.5 lb/10 ⁶ cubic feet
Lead	0.0005 lb/10 ⁶ cubic feet

HAP emission factors (not shown) were taken from Tables 1.4-3 and 1.4-4 of AP-42.

Sample Calculation:

The following sample calculation illustrates the use of the emission factors:

Emissions (lb/yr) = emission factor (lb/10⁶ ft³) * fuel usage (10⁶ ft³/yr) * number of identical units

Non-methane VOC Emissions:

VOC (lb/yr) = (5.5 lb/10⁶ ft³) * (40,584 ft³/yr) * 1

VOC (lb/yr) = 0.2232 lb/yr

VOC (ton/yr) = 0.2232 (VOC lb/yr) / 2000 (lb/ton) = 1.1E-04 ton/yr

The other pollutants (including HAPs) are calculated in the same manner as shown above.

Painting Operations Example Calculation

Data: 5.9 gal/yr paint (15 oz can x 50 cans/year x 1 gal/128 oz), paint density = 6.21 lb/gal.
Volatiles= 54.3 percent (wt.). Pigment= 45.7 percent (wt.)
HAPs: Ethylbenzene 4 percent. Xylene 23 percent, Glycol ether 5 percent.
(physical property and HAP data taken from a sample MSDS)

Emission Factors:

Emission factors are not used. Instead, engineering calculations, based on information obtained from the MSDS and from the inventory, are used to estimate emissions. This sample calculation demonstrates the method of emission calculations from aerosol spray paint cans.

Sample Calculations:

- 1) Paint usage (lb/yr) = paint (gal/yr) * density of paint (lb/gal)
Paint usage (lb/yr) = 5.86 gal/yr * 6.21 lb/gal
Paint usage (lb/yr) = 36.390 lb/yr
- 2) VOC emissions (lb/yr) = paint usage (lb/yr) * volatiles composition
VOC emissions (lb/yr) = 36.390 lb/yr * 0.543
VOC emissions (lb/yr) = 19.76 lb/yr
- 3) Ethylbenzene emissions = paint usage (lb/yr) * Ethylbenzene composition (%)
Ethylbenzene emissions = 36.390 lb/yr * 0.04
Ethylbenzene emissions = 1.455 lb/yr
(All other HAP emissions are calculated in a similar fashion)
- 4) Total suspended particulate (TSP) emissions (lb/yr)= usage (lb/yr) * pigment composition(%)
TSP emissions (lb/yr) = 36.390 lb/yr * 0.457
TSP emissions (lb/yr) = 16.631 lb/yr
TSP emissions (ton/yr) = TSP emissions (lb/yr) * 1 ton/2000 lb
TSP emissions (ton/yr) = 16.631 lb/yr * 1 ton/2000 lb = 0.0083